

## **Looking into the Future of a Region**

Betsy Smith, Ph.D.  
Regional Vulnerability Assessment Program Director  
EPA/ORD/NERL/ESD/LCB  
(919) 541-0620  
smith.betsy@epa.gov

**Key Words:** Vulnerability, Futures, Modeling, and Landscape

The U.S. EPA's Regional Vulnerability Assessment (ReVA) program addresses the latter phases of an integrated ecological risk assessment (U.S. EPA 1998) by building on available monitoring data, focusing on synthesizing information on spatial patterns, and analyzing and displaying current and future condition to allow comparison and prioritization of risk. In this session we will explore several futures models and their associated output for the Mid-Atlantic (Region 3). ReVA projects future conditions resulting from the five major drivers of change (land-use change, change in pollution and pollutants, spread of non-indigenous species, resource extraction and climate change), and looks at risk management options by comparing alternative future management scenarios. We will demonstrate a regional population-based land-use change model that incorporates plans for future roads/highways, road improvements, new development/industrial centers and areas where mines have been permitted, but don't yet exist. Since land-use change can affect groundwater, the second model demonstrates a method for determining the probability of exceeding nitrate standards within the region. The last two models to be presented will show how regional changes could alter migration patterns of neo-tropical birds and the changes that could occur in the spread of non-indigenous species both with and without climate change. The output from each of these models is synthesized in a regional futures assessment for 2020. These results, along with projected impacts from management options, are incorporated into a web-based environmental decision toolkit (EDT) that can help managers evaluate risks and target management options.

The speaker to lead the discussion is:  
Betsy Smith, Director of ReVA

Other speakers include:  
Tim Wade, EPA ORD (NERL)  
Earl Green, USGS  
Roger Tankersley, TVA  
Dan Kluza, EPA ORD (NCEA)  
Randy Pomponio, EPA Region 3